# Supplier Clean Energy

## 2022 Program Update

Apple is committed to addressing climate change and increasing the use of renewable energy around the world. Our work began years ago, making the transition to sourcing 100 percent renewable electricity at our offices, retail stores, and data centers, which we achieved in 2018. And in 2020, we took steps to be carbon neutral for our corporate emissions, including business travel and employee commute, and announced our ambitious goal to become carbon neutral for the entire life cycle of our products by 2030. To reach this target, we plan to transition our entire manufacturing supply chain — including material extraction, component manufacturing, and final product assembly — to 100 percent renewable electricity.

We launched the Supplier Clean Energy Program in 2015 to help facilitate this transition to clean energy in our manufacturing supply chain.

> "The Supplier Clean Energy Program is at the center of Apple's commitment to making world-class products with greener manufacturing. Our suppliers are taking significant actions to join us in this work, and we look forward to seeing more bold pledges as we continue to address our environmental impact."
>
> — Jeff Williams, Apple's Chief Operating Officer

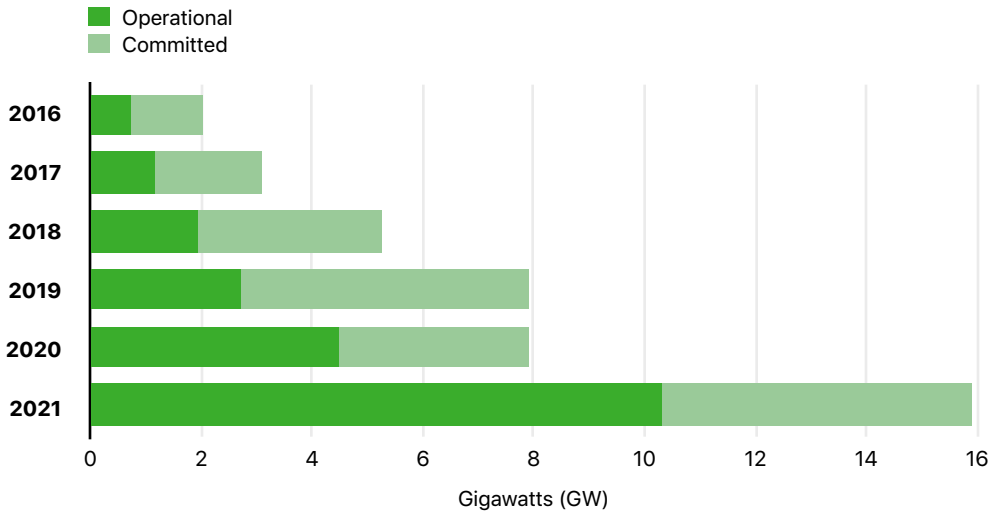
**100%**
supply chain clean energy by 2030

## Supplier Clean Energy Program

The Supplier Clean Energy Program is integral to Apple's goal of reaching carbon neutrality by 2030. We're focused on increasing energy efficiency at supplier facilities and transitioning suppliers to clean, renewable electricity. These efforts are helping to reduce product-related carbon emissions, create a more resilient supply chain, and contribute to healthier communities — while offering a model for others to follow.

We're proud of the progress our suppliers have made. As of March 2022, 213 manufacturing partners in 25 countries have committed to 100 percent renewable electricity for Apple production (see the appendix for the supplier list). Additionally, Apple itself has invested directly in nearly 500 megawatts of renewable electricity projects to cover a portion of upstream emissions. The Supplier Clean Energy Program now has almost 16 gigawatts of clean energy commitments. In fiscal year 2021, the 10.3 gigawatts of renewable energy already online in Apple's supply chain generated 18.1 million megawatt-hours of clean energy, avoiding 13.9 million metric tons of carbon emissions — a 62 percent increase over fiscal year 2020.

**Supplier Clean Energy Program progress by fiscal year**




To ensure that our program achieves the greatest positive impact, we require that all supplier clean energy projects meet stringent social and environmental standards. The data above reflects only those projects that meet our strict standards and include only clean energy generated or sourced since Apple's engagement. Operational data is based on our last annual supplier energy survey for fiscal year 2021.

## Transitioning the supply chain to renewable energy

Apple envisions a world where renewable energy is cost-effective, reliable, and widely available to all. More renewable energy means healthier air, stronger local economies, and lower carbon emissions. And our commitment to carbon neutrality will require an unprecedented supply chain transformation toward renewable energy, supporting the addition of gigawatts of new generation across the world.

Our Supplier Energy Efficiency and Supplier Clean Energy Programs work hand in hand to reduce the energy used in our supply chain and transition the remaining electricity to renewable sources. We measure our progress and take responsibility for the emissions generated in our supply chain as part of our comprehensive carbon footprint. But we also know that we can achieve even more significant climate impact by providing a model for other companies to follow with their suppliers and customers, helping to reduce emissions beyond our industry.

Our experience in transitioning our facilities to 100 percent renewable electricity gives us knowledge we can share. And we help break down barriers through engagement, innovative funding structures, and advocacy of clean energy–friendly policies.

**Supplier energy efficiency and clean energy achievements**

### 2015

**Launch** of the Supplier Clean Energy Program and Supplier Energy Efficiency Program

### 2017

**Launch** of the Supplier Clean Energy Portal

Initial Apple **investment toward the development of 500 megawatts** of solar and wind projects to address upstream emissions in Apple's supply chain

**Supplier Code of Conduct** requires suppliers to maintain an inventory of air emissions including greenhouse gases

### 2018

Launch of the **China Clean Energy Fund**, which will enable Apple and our suppliers to invest in more than 1 gigawatt of renewable energy in China

### 2019

**Key supplier commitments** reached in major supply chain countries

First **in-person training** hosted by Apple for over 30 suppliers in China

### 2020

**Over 100 suppliers** committed to 100 percent renewable electricity for Apple production

All of Apple's product final assembly sites committed to **100 percent renewable electricity** for Apple production

### 2021

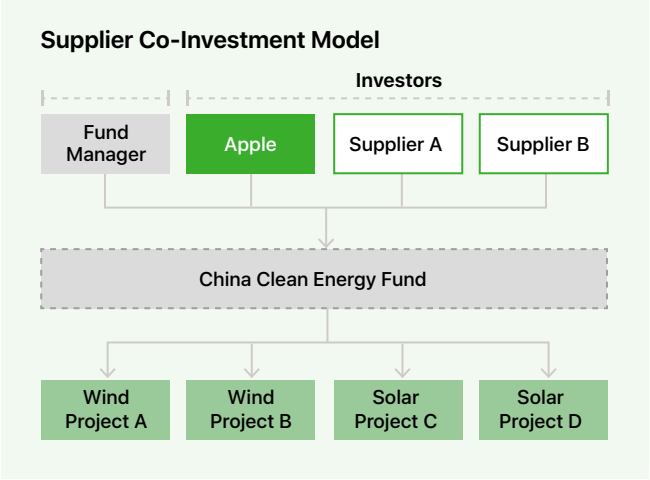
**Over 200 suppliers** across 26 countries committed to 100 percent renewable electricity for Apple production

**Galvanizing internal champions.** Apple employees are passionate about the environment and driven to help meet our 2030 carbon neutrality goal. We're empowering supplier-facing employees with the tools they need to support this goal and speed a supplier's transition to renewable electricity. It starts with data and transparency. We track the progress of our suppliers, including those just beginning to learn about renewable electricity, and others who are well on their way to using 100 percent renewable electricity. We've also created internal trainings and crafted a simple engagement process, backed by resources for both Apple employees and our suppliers. By connecting our suppliers with resources and providing transparency on supplier progress, our teams are scaling impact across our supply chain.

**Supporting supplier capacity.** We share the experience gained through our transition to 100 percent renewable energy with our suppliers. We introduce suppliers to resources and training materials with country-specific information to guide them in their transition to renewables. These tools are available through our Supplier Clean Energy Portal. We also educate suppliers through advanced and customized training with leading experts. And we support the creation and growth of renewable energy industry associations that our suppliers can join to learn about local opportunities.

Long-standing energy structures can make it difficult to bring new renewable energy online in some regions, prompting some of our suppliers to maximize proven renewable energy solutions — like onsite solar installations. Others have pioneered new purchasing methods, created renewable energy businesses or even participated in some of the world's largest and most innovative renewable energy deals.

**Expanding access to renewable electricity.** In many markets where we operate, companies have limited options to access clean energy. To break down that barrier, we created the China Clean Energy Fund, which enables Apple and our suppliers to invest in clean energy projects totaling more than 1 gigawatt of renewable energy in China. We also connect suppliers with opportunities to buy renewable energy directly from project developers and utilities as those models emerge around the globe.




**Advocating for policy change.** Government policies and rules can present some of the largest barriers to transitioning to renewables. We lend our voice and stand with other companies and NGOs to break down policy barriers in order to achieve thriving clean energy markets with, for example, enhanced grid resiliency and greater energy innovation. Across regions where our suppliers operate, we engage with policymakers to support renewable energy that is cost-effective, accessible to companies, and sourced from high-quality projects with a material impact on local markets.

We recognize that to transition to renewable energy at scale, clean energy investments need to make financial sense. However, carbon-intensive energy sources, like coal and gas, often have an unfair price advantage because of explicit subsidies and the ignored costs of externalities — like air pollution and carbon emissions. So we are encouraging governments not to subsidize or expand carbon-intensive infrastructure that will unfairly inhibit competition and discourage the development of new technologies like renewable energy and advanced energy storage technologies.

## Apple's Clean Energy Standards

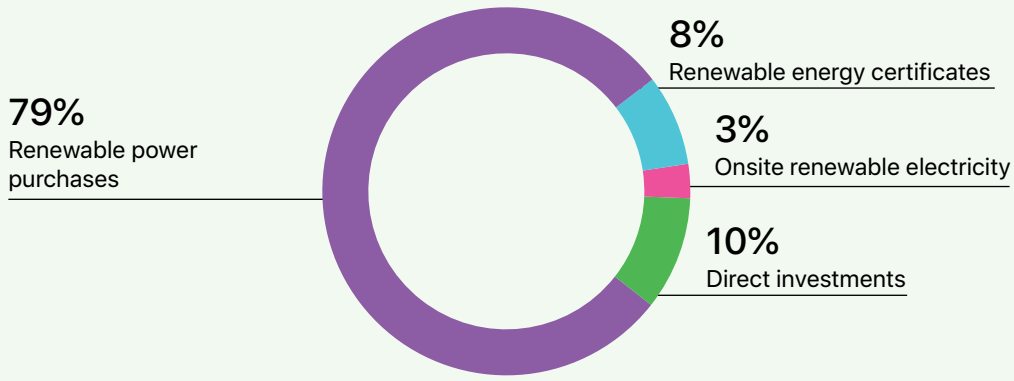
We help our suppliers select projects with the greatest potential for impact and with a clear carbon, ecological, and social benefit, and we consider the life-cycle emissions associated with current and emerging clean energy technologies. In most cases, wind and solar solutions meet our criteria. For some energy solutions, such as biomass and hydroelectric generation, we review individual projects to ensure that they deliver positive impact while minimizing harm. We also uphold stringent accountability standards to ensure that all clean energy can be verified.

We want to be a driving force for new projects and help overcome barriers to bring new renewable energy online. With the rapidly changing policy dynamics in some of our key countries, we continuously evolve our framework both to comply with local laws and regulations and to yield the most positive and meaningful energy transformation.

## Supplier Projects

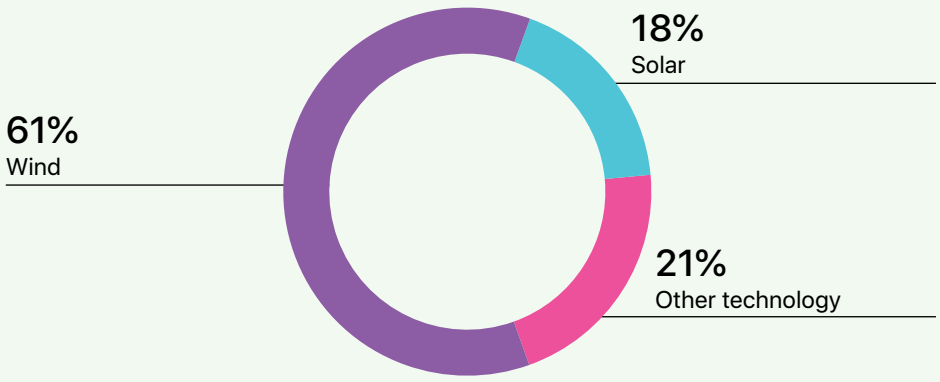
The following charts include breakdowns of the contracting mechanisms and technologies suppliers have identified to help meet their commitments.

**Supplier renewable energy procurement mechanisms (FY2021)**




Apple and its suppliers are implementing clean energy solutions using a variety of contracting mechanisms — with renewable power purchases representing the majority of solutions implemented to date at 79 percent.

**Supplier renewable energy technology solutions (FY2021)**




"Other technology" includes clean energy sources such as some forms of biomass, geothermal, and small-scale low-impact hydro. We help our suppliers select projects with the greatest potential for impact and with a clear carbon, ecological, and social benefit.

# Appendix

## Supplier Commitments

The list of 213 suppliers who have committed to transitioning to 100 percent renewable electricity for Apple production as of March 2022.

## Independent Assurance Statement (Apex)

The third party assurance statement verifies the environmental benefits of our Supplier Clean Energy Program, outlined in this report, as well as a one-time purchase of renewable energy credits — equivalent to 0.3 gigawatts of capacity, 500,000 megawatt-hours of renewable electricity generation, and 360,000 metric tons of carbon emissions — that Apple made to cover a small increase in its FY21 carbon footprint.

## Supplier Commitments

As we continue transitioning our supply chain to clean energy, these 213 suppliers — including over 100 new commitments in the past year — have committed globally to producing Apple products with 100 percent clean electricity:

- II-VI Incorporated
- 3M
- AAC Acoustic Technologies*
- Advanced International Multitech
- AKM Meadville Electronics
- Alpha and Omega Semiconductor Limited
- Alps Alpine*
- Amagasaki Seikan*
- Amphenol
- Arkema
- ASE Technology Holding
- Asia Vital Components Company Limited
- AT&S
- Auras Technology Co., Ltd.
- Avary Holding
- Bemis Associates
- Bichamp Cutting Technology*
- Biel Crystal (HK) Manufactory Ltd.
- BOE
- Bourns K.K.*
- Boyd Corporation
- Bruel & Kjaer*
- Bumchun Precision Co., Ltd.*
- BYD Electronic (International) Company Limited
- Career Tech*
- Catcher Technology
- Cathay Tat Ming*
- CCL Industries Incorporated
- The Chemours Company
- Cheng Loong Corporation
- Cheng Uei (Foxlink)*
- Chengdu Homin*
- China Circuit Technology (Shantou) Corporation (CCTC)*
- Citizen Electronics Co., Ltd.*
- CN Innovations Holdings Limited*
- Compal Electronics
- Compeq
- Cooler Master Co., Ltd.
- Corning Incorporated
- COSMO
- Cowell Optic Electronics Ltd.
- CymMetrik
- Daesang
- Derkwoo*
- Dexerials Corporation
- Dongguan JieYing Precision Silicone Technology Co., Ltd.*
- DSM Engineering Materials
- E.I. DuPont deNemours and Company*
- ECCO Leather
- Eldim SA*
- Engineering Material Solutions LLC*
- Everlight Electronics Co., Ltd.
- Fastway Creation
- Flex Ltd.
- Flexium Interconnect Inc.*
- Fujikura Limited*
- Future Hi Tech Company Limited
- G. Bopp & Co. AG*
- General Interface Solution Ltd.
- Global Lighting Technologies*
- Goertek
- Goertek Microelectronics
- Golden Arrow Printing Technology Co., LTD
- GSEO*
- Guangdong Ellington*
- H.B. Fuller
- Hama Naka Shoukin Industry Company Limited
- Henkel
- Hi-P International Limited
- Hirose Electric Co., Ltd.*
- Hon Hai Precision Industry
- I-PEX Inc.*
- INB Electronics*
- Infineon Technologies AG*
- Injection Rubber Industrial Co., Ltd.*
- Interplex Electronic (Hangzhou) Co., Ltd.*
- Intramedia*
- ITM Semiconductor Co., Ltd.
- J.Pond Industry (Dongguan) Co., Ltd.*
- Jabil
- Japan Aviation Electronics, Limited*
- Jarllytec*
- JDI*
- Jiangsu Gian Technology Co., Ltd.*
- Jiangyin Kangrui Molding Technology Co., Ltd.
- Jinlong Machinery and Electronics*
- Jones Tech. Plc.
- JXTG Holdings Inc.*
- Kam Kiu Aluminium*
- Keiwa Incorporated
- Kersen Science & Technology
- Kioxia Corporation*
- Ko Ja (Cayman) Co., Ltd.*
- Konrad Gmbh*
- Kun Shan Nishoku Plastic Electronic Co., Ltd.*
- Kunshan KIMD Co., Ltd.
- Laboratorio Elettrofisico*
- Largan Precision Co., Ltd.*
- LEALEA Enterprise Co., Ltd.
- Lens Technology
- LG Display Company Limited*
- LG Energy Solution*
- Lingyi iTech
- Lishen
- Lite-On Technology Corp*
- LOTES*
- Luen Fung Group
- Lumileds*
- Luxshare-ICT
- Marian Inc.
- Micron*
- Minebea Mitsumi Inc.*
- Mingxun
- Molex Inc.*
- Multi-Fineline Electronix, Inc.*
- Murata Manufacturing Co., Ltd.
- MYS Group Co., Ltd.
- Nan Ya PCB*
- Nanofilm*
- Nidec
- Nihon Dempa Kogyo*
- Ningbo Magsound Industry Co., Ltd.
- Nippon Mektron (Mektec)*
- Nitto Denko Corporation
- Nordic Semiconductor ASA
- Pai Shing International Limited
- Pegatron
- Penn Engineering*
- Phone In Mag-Electronics
- Pioneer Material Precision Co., Ltd.*
- Plansee Group*
- Platinum Optics Technology*
- POSCO*
- PPG Industries*
- Primax Group
- Qorvo
- Quadrant
- Quanta Computer
- ROE*
- RRD
- RyPax Wing Fat Inc.
- SABIC*
- SAES Getters S.p.A.
- Samsung SDI Co., Ltd.*
- SDK
- Seiko Advance Ltd.
- Seoul Semiconductor
- Sichuan Furong Technology Co., Ltd.*
- Shandong Innovation Metal Technology Co., Ltd.*
- Sharp Corporation*
- Shenghe Resource

- Shenzhen Deren Electronic Co., Ltd.*
- Shenzhen Desay Battery Technology
- Shenzhen Everwin Precision Technology Co., Ltd.*
- Shenzhen Fortunta Technology Company Limited
- Shenzhen Ruicycle*
- Shenzhen Shi Zhenghe Zhongxin Share Holdings Co., Ltd.*
- Shenzhen Shindy Technology Co., Ltd.*
- Shenzhen Sunway Communication Co.,Ltd.
- Shin Zu Shing Co., Ltd.*
- Simplo Technology Company Limited
- Singleton Materials Corporation*
- SK hynix
- SoluM*
- Solvay
- Sony Semiconductor Solutions
- Stanley Electric Co., Ltd.*
- STMicroelectronics
- Stora Enso Oyj
- Sumitomo Electric Industries*
- Sunny Optical*
- Sunwoda Electronic
- Suzhou Anjie Technology
- Suzhou Hengmingda Electronic Technology Co., Ltd.
- Suzhou Jiazhi Electronic Co., Ltd.*
- Suzhou Wanxiang Technology Co., Ltd.*
- Suzhou Yinke*
- Taiwan Hodaka Technology Co., Ltd.*
- Taiyo Holdings Co., Ltd.
- Taiyo Yuden Co., Ltd.*
- TDK Corporation*
- tesa SE
- Tianma Micro-Electronics (Hong Kong) Ltd.
- Tong Tai Ying Technology Co., Ltd.
- Tongda Group*
- Toyo Precision Appliance (Kunshan) Co., Ltd.*
- TPK*
- Trinseo S.A.
- Trio Metal Co., Ltd.
- Triotek*
- Tripod Technology Corporation*
- Tritree*
- TSMC
- Tsujiden Co., Ltd.
- TXC Corporation*
- UACJ Corporation*
- Unimicron*
- Unisteel
- Unitech*
- United Test and Assembly Center (Dongguan) Co., Ltd.*
- VARTA Microbattery GmbH
- Viavi*
- Victrex Plc.*
- Viscom AG*
- Western Digital*
- Wingtech Technology Co., Ltd.*
- Winox Enterprise Company Limited*
- Wistron
- Yageo*
- Ying Shing Enterprises Limited
- Young Poong*
- Yuto
- Zhuhai CosMX Battery Co., Ltd.

*Suppliers that have committed to 100 percent renewable energy since publication of the last Program Update in April 2021.

**INDEPENDENT ASSURANCE STATEMENT**

**To: The Stakeholders of Apple, Inc.**

## Introduction and objectives of work

Apex Companies, LLC (Apex) was engaged by Apple, Inc. (Apple) to conduct an independent assurance of its Supplier Clean Energy Program data reported in its 2021 environmental report (the Report). This assurance statement applies to the related information included within the scope of work described below. The intended users of the assurance statement are the stakeholders of Apple. The overall aim of this process is to provide assurance to Apple's stakeholders on the accuracy, reliability and objectivity of select information included in the Report.

This information and its presentation in the Report are the sole responsibility of the management of Apple. Apex was not involved in the collection of the information or the drafting of the Report.

## Scope of Work

Apple requested Apex to include in its independent review the following:

- Methodology for tracking and verifying supplier clean energy contributions, including the Energy Survey, Renewable Energy Agreement, and other forms of supporting documentation provided by suppliers where available;
- Assurance of Clean Energy Program data and information for the fiscal year 2021 reporting period (September 28, 2020 through September 26, 2021), specifically, in accordance with Apple's definitions:
  - Energy: Reported megawatt-hours (MWh) of clean energy attributed to the Clean Energy Program for suppliers;
  - Avoided Greenhouse Gas (GHG) emissions associated with clean energy attributed to the Clean Energy Program;
  - Operational Capacity in megawatts (MWac) of clean energy in support of Apple manufacturing as a part of Apple's Supplier Clean Energy Program;
  - Appropriateness and robustness of underlying reporting systems and processes, used to collect, analyze, and review the information reported;

Excluded from the scope of our work is any assurance of information relating to:

- Text or other written statements associated with the Report
- Activities outside the defined assurance period

## Assessment Standards

Our work was conducted against Apex's standard procedures and guidelines for external Verification of Sustainability Reports, based on current best practice in independent assurance. Apex procedures are based on principles and methods described in the International Standard on Assurance Engagements (ISAE) 3000 Revised, Assurance Engagements Other than Audits or Reviews of Historical Financial Information (effective for assurance reports dated on or after Dec. 15, 2015), issued by the International Auditing and Assurance Standards Board and ISO 14064-3: Greenhouse gases -- Part 3: Specification with guidance for the validation and verification of greenhouse gas statements.

## Methodology

Apex undertook the following activities:

1. Remote virtual visit to Apple corporate offices in Cupertino, California;
2. Interviews with relevant personnel of Apple;
3. Review of internal and external documentary evidence produced by Apple;
4. Audit of reported data, including a detailed review of a sample of data against source data; and

5. Review of Apple information systems for collection, aggregation, analysis and internal verification and review of environmental data.

The work was planned and carried out to provide reasonable assurance for all indicators and we believe it provides an appropriate basis for our conclusions.

## Our Findings

Apex verified the following indicators for Apple's Fiscal Year 2021 reporting period (September 28, 2020 through September 26, 2021):

| Parameter | Quantity | Units | Boundary/ Protocol |
|---|---|---|---|
| Clean Energy Use | 18.6 | Million megawatt hours (mMWh) | Apple suppliers / Apple Internal Protocol |
| Avoided GHG Emissions | 14.24 | Million metric tons of carbon dioxide equivalent ($mMtCO_2e$) | Apple suppliers / Apple Internal Protocol |
| Operational Capacity | 10,596 | Megawatts (MWac) | Apple suppliers / Apple Internal Protocol |

## Our Conclusion

Based on the assurance process and procedures conducted, we conclude that:

- The Clean Energy Use, Avoided GHG Emissions, and Operational Capacity assertions shown above are materially correct and are a fair representation of the data and information; and
- Apple has established appropriate systems for the collection, aggregation and analysis of relevant environmental information, and has implemented underlying internal assurance practices that provide a reasonable degree of confidence that such information is complete and accurate.

## Statement of independence, integrity and competence

Apex has implemented a Code of Ethics across the business to maintain high ethical standards among staff in their day to day business activities. We are particularly vigilant in the prevention of conflicts of interest.

No member of the assurance team has a business relationship with Apple, its Directors or Managers beyond that required of this assignment. We have conducted this verification independently, and there has been no conflict of interest.

The assurance team has extensive experience in conducting verification and assurance over environmental, social, ethical and health and safety information, systems and processes, has over 30 years combined experience in this field and an excellent understanding of Apex standard methodology for the Assurance of Sustainability Reports.

**Attestation:**

Trevor A. Donaghu, Lead Assuror
Program Manager
Sustainability and Climate Change Services

David Reilly, Technical Reviewer
Principal Consultant
Sustainability and Climate Change Services

March 8, 2022